

# The benefits of not competing

Pre-competitive collaboration allows a group of competing companies to come together to develop a solution for a problem that they all share, and from which none of them would gain a competitive advantage. Although the primary goal is often cited as the development of that solution, the process of conversing and collaborating is in itself of great value, and a project that enables colleagues from across the industry to develop closer working relationships with each other can be beneficial, even if the deliverables do not live up to expectations. Simply waiting for an existing group to come up with something might appear to be risk-free, and certainly reduces effort, but passive bystanders to pre-competitive collaboration projects are actually losing out on much more than they think.

Pre-competitive collaboration aims to bring together multiple stakeholders that share a common pain point, and encourage them to develop a common solution that they can all benefit from, without giving any one of them a competitive advantage over another. In this manner a whole industry sector can move forward as one, overcoming an operational hurdle or lowering a barrier to innovation that enables all to make progress, often including those who did not directly participate in the creation of the solution. Although some organisations may ultimately benefit more from the collaboration than others by making more clever or strategic use of the output, the defining principle of pre-competitive collaboration is that the output should be accessible to all parties to make of it what they will on their own terms.

Potential subjects for collaboration tend to arise in one of two ways. An organisation may be working on a solution already, then later in conversation with others it might discover that the problem it is seeking to address is not unique, and thus propose that it joins forces, sharing its existing solution as a starting point for inter-organisational develop-

ment. Alternatively, a group of organisations may recognise a common pain point and agree to carry out joint research into potential solutions. Either way, the result is a group of potentially competitive organisations working together to find a common way forward.

The concept of pre-competitive collaboration is not new to the pharmaceutical industry, or indeed the wider life sciences industry, and several alliances, consortia and working parties already exist in the sector. Many other industry sectors also make use of the idea, some to greater degrees than others, with airline alliances being a prime example. It is hard to find any major pharmaceutical company now that is not involved in at least one pre-competitive collaboration, whether instigated directly with its partners or via a third-party alliance that they are all members of, and as potential issues around IP and data security become more well understood, the willingness to engage in such activities is steadily increasing.

The increased interest in pre-competitive collaboration in the pharmaceutical industry specifically, and particularly for its R&D teams, is driven by

**By Richard Holland**

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Diagram illustrating the organisation of the Pistoia Alliance and how its various constituents interface with each other

the realisation that many of the major obstacles that have to be overcome in order to accelerate R&D are simply too large or inefficient to attempt to tackle alone. Rapidly evolving technology and data formats, in particular, lead to multiple parallel attempts to create in-house ‘standards’ which are often nothing of the sort, and cause major headaches when trying to collaborate with external research partners. Research collaborations are becoming increasingly important, with CROs, healthcare systems, insurance companies, governments and small biotechs all becoming key partners within the pharma development pipeline, and it is a significant technical barrier if each of them has developed incompatible solutions to the same shared issues.

Of course a shared solution, jointly developed, is not without issues of its own. Once created, standards or software products must be promoted heavily and much effort put into encouraging their adoption so that they do not become a mere passing fad, and they must be actively maintained to keep their specifications relevant or their tools up-to-date. This requires major effort, often involving travel to present papers at conferences, publicise the activity through the industry media, or run

technical events with potential users, all of which sits at odds with the conservative approach to marketing and travel that many pharma companies currently take; indeed many R&D departments have no budget at all for this kind of promotional work.

A commitment to collaboration can also require more resources than at first seems apparent. It takes much effort to stay abreast of the latest developments and opportunities to participate in collaborations initiated by others, and to understand whom to approach outside of the organisation when it is necessary to propose a new collaborative project. Once inside the collaboration, many teams are made up of volunteers from within the organisations that are supporting the joint effort, augmented with maybe only a couple of paid staff to keep things running smoothly or to carry out specific technical development work, and these volunteers have day jobs to do which must usually take priority. When calculating the potential costs of a collaborative project it is important to consider the impact of distracting staff from their day jobs, the impact in turn on the project’s delivery deadlines should staff need to refocus elsewhere on urgent internal matters, and the need to dedicate specific resources to maintaining currency when it comes to understanding the status of the collaborative landscape. Pre-competitive collaboration is certainly not simply about reallocating a proportion of R&D budget to an external group.

With these limitations recognised and suitably accounted for, a carefully researched and accurately specified pre-competitive collaboration project can deliver significant value for any organisation. The ability to access resources from across the sector can bring new minds and new insights to the problem in hand, offering a different perspective or simply validating the existing approach and showing that the right decisions are already being made. While compromise has to be made in that any solution developed must deliver a combined feature set agreed upon by all participants, which may not tick every box from each individual organisation, the overall solution is almost certainly going to be more robust, richly featured and widely applicable than had it been developed alone to meet a single organisation’s requirements.

While it can be relatively straightforward to compute the costs of involvement in any individual collaboration, assessing the value is much trickier yet equally as important when it comes to determining the cost:benefit ratio so often required to convince budget-holders to invest, especially when attempting to compare it to the equivalent cost of

doing the work alone in-house. The problem is that the value of common standards or open software tools is a difficult thing to pin down, especially when there is an option to let others in the industry get on with developing the solution and wait for them to complete the work before ultimately adopting the output when it is published, thus seemingly gaining all of the benefit without putting in any of the effort. Thus the value derived from active engagement in these collaborations is less to do with the need for the software or the commercial benefit that having a solution will bring about, but more to do with the value of the process of engagement and collaboration in itself.

It may be easier to argue that the cost of not collaborating outweighs the expense of doing so. Waiting for someone else to create a solution may be cost-free but it is certainly not risk-free. Without getting directly involved it is unlikely that key requirements will be heard or considered, and nobody will be representing the interests of those not involved when making key technical or strate-

gic decisions. The timeline is also externally controlled, meaning that there is no visibility as to when the solution might be delivered, and without influence to advance or enforce a deadline or indeed to be able to access pre-production prototypes or works in progress, an organisation that is sitting on the sidelines is unable to rely with any certainty on the nature of the deliverables or when they might arrive. The simple act of engaging in conversation through a project of this nature can also itself be of great value regardless of the success of the outcome, encouraging a collaborative spirit among colleagues that boosts morale and motivation, opening channels of communication both externally and internally that did not previously exist, and enhancing the organisation's reputation as one that is willing to engage and take an active role within the wider life sciences community.

Since the concept of pre-competitive collaboration has become more mainstream, more and more groups are being set up to facilitate it, creating an explosion in activity that is starting to show early



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Collaboration in action at a recent Pistoia Alliance conference



signs of a kind of ‘alliance fatigue’. Whereas previously a pharma company may have had to choose between only a handful of collaborative alliances or working parties, each focused on a broad but well defined area of responsibility which made it easy to select the most appropriate one for the project in hand, now there seems to be a foundation or alliance for every standard or toolkit under the sun, each competing for the same membership and funding sources to support their overheads and keep their projects and outputs alive. This is hardly an efficient way to support innovation in the sector, with each alliance having to employ similar management staff and incur similar overheads in their day-to-day business that could otherwise have been shared quite effectively between the support of a number of related foundations, but until the alliance sector sees some streamlining, consolidation, and better sustainability planning, pharma companies have little choice but to dive in and see what they can make of it.

Some existing alliances are already taking steps to address this issue, with the Pistoia Alliance currently developing a public Map of Alliances to physically map the memberships and goals of all the R&D-focused pre-competitive collaboration alliances and foundations, so that it becomes easy to pick out which alliance is focused on what topic, and which pharma companies are already supporting each one. The PRISME Forum is also working on something similar as an internal

research tool for its membership. With a better understanding of the alliance landscape developed and supported in this way by the alliances themselves, pharma companies can make more informed decisions regarding the initiatives they wish to support, or where to look to create their own projects, and can reduce dependence on their own in-house research to unearth the information needed to support that decision.

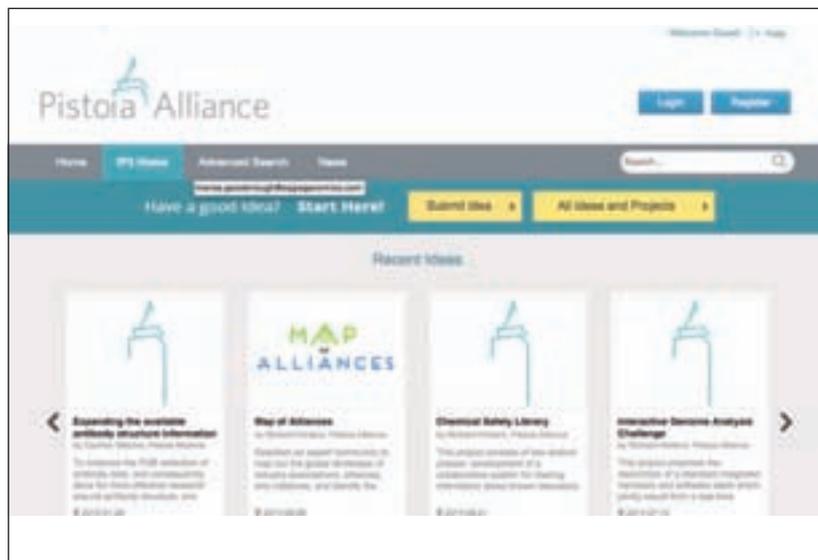
As an example of what may be achieved via pre-competitive collaboration, the Pistoia Alliance’s ongoing Ontologies Mapping project illustrates the benefits very well. Starting from the underlying principle that metadata (data that describes other data and tells us what it is) is becoming a key component of the datasets that R&D teams process, and that good metadata is derived from controlled vocabularies that specify exactly how things may be described, the logical assumption is that it makes sense to ensure all data is annotated using the same metadata standard or the data itself should be derived from the same controlled vocabularies so that it may easily be combined and understood. This is especially important when working with external collaborators that need to exchange data from multiple sources with the principal investigator. However, no such ideal world exists, and every data source tends to use its own metadata and different controlled vocabularies, making them very tricky to integrate.

The Ontologies Mapping project sets out to

create the infrastructure needed to maintain a thesaurus that cross-references the many different controlled vocabularies that exist. By using the thesaurus as an intermediary when integrating multiple datasets from a myriad of external collaborators and data providers, researchers can construct queries that correctly equate datapoints from across all sources without first needing to translate or convert each source and risk losing some of the implied nuance of the original annotation. As the thesauri are updated over time, including mappings to existing in-house terminology, more accurate queries can be run without needing to re-translate the source data, thus speeding up the R&D process and decreasing the time to new discoveries.

As a standalone project this would be next to impossible to produce within the context of a pharma R&D IT organisation, at least not to an acceptable standard that would survive the test of time, but as a collaborative project it enables all the organisations involved to get together, share existing toolkits and initiatives, and create a solution that brings together the best of all of them. The solution is then shared with everyone, and in this case published openly as well for the benefit of the entire industry. The competitive advantage does not come from the existence of the tool itself, but the data that is ultimately processed through it. This creates a clear division between the competitive use of the tool and its pre-competitive development, and enables the organisations backing it to do so in the safe knowledge that none of their own data or commercially sensitive IP will be involved in the development process. Pharma companies are not software houses or standards bodies and should not be developing associated IP of any significant external value, and so in the same way that they often outsource their core IT systems and support, the effective outsourcing of sticky R&D problems to be solved by collaborative groups makes just as much operational sense.

Another example of success has been the tranSMART Foundation, built around a software product initially developed in-house by J&J then open-sourced and donated to the foundation so that the whole industry might benefit from it. With tranSMART now being adopted by many global pharma companies, each of whom also contributes to the foundation both financially and in-kind as the occasion demands, the industry is able to use the foundation to keep a valuable open-source software product alive and available for them all to use and, more importantly, rely upon. Whereas it might be possible for each of them to hire develop-



ers to build upon the tranSMART code themselves or to create functional replicates, the economics of doing so simply do not add up when compared to what, in effect, equates to hiring a shared resource supplied by a reputable vendor, and so working together through the foundation provides a much more attractive and efficient proposition than working in isolation.

The pre-competitive collaboration approach is not limited to software or even R&D IT. Recent Pistoia Alliance initiatives include the collection, processing and deposition into the public Protein Data Bank (PDB) of hundreds of antibody structures developed within pharma industry labs but no longer considered to be of commercial interest, thus making them available to the entire life sciences research sector and enabling new insights and discoveries to be made. Another Pistoia Alliance initiative is an attempt to streamline the process of notifying potentially dangerous chemical reactions to researchers by making the contents of lab safety incident logs more immediately accessible in the right place and at the right time, potentially including suitably anonymised incidents from other organisations as well to provide a genuine cross-industry solution and deliver a step-change in lab safety.

Much of this article has used language that implies that this is an approach best suited to large pharma companies and similarly-sized technology vendors providing the industry with its products and services. Nothing could be further from the truth. Small businesses have just as much to gain by getting engaged in pre-competitive collaborations and supplying their expertise in exchange for

A screenshot of the Pistoia Alliance online collaboration portal, IP3

Collaboration in action at a recent Pistoia Alliance conference



the opportunity to lead and specify the solutions that they themselves need to grow their own commercial activity. Small businesses simply often do not have the option to just go out and hire another developer or commission a piece of contract development work, since their finances are often constrained. However, they might be able to divert existing staff time and other resources to contribute to a joint group approach which may not deliver them 100% of what they need, but could well save them 80% of the effort if the group is large and active enough. Involvement in these groups and exposure to the conversations with their peers from competitors and potential clients alike also gives them invaluable insight into the market, something that is always of great use in the early stages of a biotech startup.

As the landscape of pre-competitive collaboration alliances and foundations matures, it will become easier for organisations of all kinds to work out how best to engage with the community to move their projects forward. However, waiting for that to happen before taking further action to engage in collaborative activities does not make sense, as even the simplest direct collaboration between only two partners can have substantial immediate benefits on both sides. A project that delivers a world-changing standard or software tool is clearly a great thing to achieve as the result of such teamwork, but the focus really needs to be

on the process itself as that is where the biggest upsides lie regardless of the outcome. With apologies to Alfred Lord Tennyson, 'tis better to have collaborated and not succeeded than never to have collaborated at all.

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*Richard Holland is Executive Director Operations at the Pistoia Alliance. Prior to joining the Alliance, Richard was co-founder of Eagle Genomics, a Cambridge-based bioinformatics startup. He has held positions at major academic research institutes including the European Bioinformatics Institute (EMBL-EBI), with more than 15 years' experience in life science R&D IT.*